

Sniper and Anti-materiel Rifle Threat

Summary: Sniper rifles in 7.62 mm have been used by all armies for many years. The accepted U.S. definition of sniper is a “highly skilled military marksman detailed to spot and pick off enemy troops from a concealed position.” Most of these weapons have limited armor penetration ability (lightly armored vehicles). More recently sniper rifles in 12.7 mm (.50 cal) and above have proliferated to the point that any U.S. force is likely to encounter them in every combat environment. Within the past ten years another trend is to equip armies with anti-materiel rifles (a.k.a. hand cannons) generally in 14.5 to 20 mm. Some of these were designed not to destroy a vehicle but to neutralize a specific capability mounted externally on the vehicle (see Croatia’s RT-20 below).

7.62 mm (.308 cal). The representative rifle in this caliber is the widely proliferated 7.62x54R SVD (Russian and clones). It can penetrate lightly armored vehicles (10 mm @ 200 m).

12.7 mm (.50 cal) Sniper/anti-materiel rifles. These rifles are integral to any modern battlefield. Although generally categorized as sniper rifles (and capable of being used against personnel), they are generally employed as anti-materiel rifles. The most widely proliferated of these rifles, whether labelled as a sniper or anti-materiel rifle, is the U.S. Barrett M82A1/M95 .50 cal semi-automatic rifle, followed by the Croatian MACS M2-1/M3 (12.7-mm bolt action), then the Russian V-94 (12.7-mm semi-auto). The Barrett M82A1 is employed by all U.S. military forces as well as 27 other countries including Belgium, Chile, Denmark, Finland, France, Greece, Italy, Netherlands, Norway, Philippines, Portugal, Saudi Arabia, and UK. The Saboted Light Armor Penetrator (SLAP) round fired from the M82A1 can penetrate 19 mm (.75 in) of armor @ 1,500 m. It can also fire a multi-purpose round (See M82A1 data sheet). Approximately 25 variants of 12.7-mm sniper/anti-materiel rifles are available.


Larger-caliber Anti-materiel Rifles (14.5 to 20-mm). A trend during the past ten years has been towards larger-caliber anti-materiel rifles. Although several are manufactured, the Croatian RT20 20-mm “hand cannon” is the most prevalent (range 1,800 m). It can fire either HE or API. The RT20 was developed primarily to penetrate the armored casing around the thermal sight head on M84 tanks (a 20-mm round was the smallest caliber that could penetrate the casing). During the war in the former Yugoslavia, M84s were frequently deployed to detect Croatian infantry moving at night, so a method of removing their night-vision capability was found with this RT20 “hand cannon”.

Other anti-materiel rifles readily available are:

- South African NTW 20-mm (range 1,500 m)
- NTW 14.5-mm (range 2,300 m)
- Hungary Gepard M3 14.5-mm (range 1,000 m)
- Austria Steyr IWS 2000 15.2-mm (range 1,000 m)

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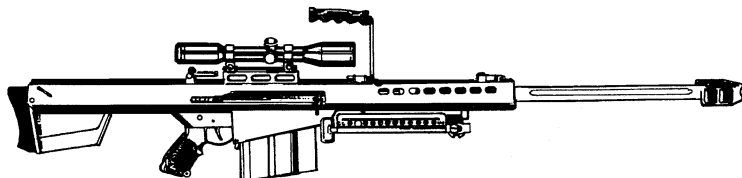
Russian 7.62-mm Sniper Rifle SVD

	<table><tr><th>Ammunition Types</th><th>Typical Combat Load</th></tr><tr><td>7.62-mm cartridge Light Ball Heavy Ball Sniper Enhanced Penetration AP-I Tracer</td><td>40</td></tr></table>	Ammunition Types	Typical Combat Load	7.62-mm cartridge Light Ball Heavy Ball Sniper Enhanced Penetration AP-I Tracer	40
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7.62-mm cartridge Light Ball Heavy Ball Sniper Enhanced Penetration AP-I Tracer	40				
<p>SYSTEM</p> <p>Alternative Designations: Dragunov Date of Introduction: 1967 Proliferation: Widespread</p> <p>Description: Weight (kg): Loaded (with magazine): 4.5 Empty (w/o magazine): 4.3 Length (mm): Overall: 1,230 With Bayonet: 1,370 Barrel: 620 Rate of Fire (rd/min): 30 Operation: Gas Feed: 10-rd detachable box magazine (15-rd available for the SVD-S) Fire Mode: Semi-automatic only</p> <p>SIGHTS</p> <p>Name: PSO-1 Type: Infrared detection capability for night firing Magnification: 4x Field of View (°): 6</p> <p>Night Sights Available: Yes. NSPU-3 . The NSPU-3 increases accuracy to 1,000 m at night or during poor visibility. Sighting Range (m): 1,300</p> <p>VARIANTS</p> <p>SVD-S: Folding stock, 15-rd magazine SVU: Bullpup (trigger forward of magazine) OTs-03AS: SVU w/PSO-1 sight. 6V1: SVD with PSO-1 sight. 6V1-N3: SVD with NSPU-3 night sight.</p>	<p>AMMUNITION</p> <p>Name: Sniper (7N14) Caliber/length: 7.62x54R-mm rimmed Type: Steel core Range (m): Maximum: 3,800 With Scope: 1,300 Without Scope: 800 Armor Penetration: INA Muzzle Velocity (m/s): 823</p> <p>Name: 7N13 Caliber/length: 7.62x54R-mm rimmed Type: Enhanced penetration Range (m): Sighting: 2,000 Armor Penetration (mm): INA. (Effective against lightly armored vehicles and crews.) Muzzle Velocity (m/s): INA</p> <p>Name: B-32 Caliber/length: 7.62x54R-mm rimmed Type: AP-I Range (m): Sighting: 2,000 Armor Penetration: 10-mm @ 200 m Muzzle Velocity (m/s): 808</p> <p>Name: T-46 Caliber/length: 7.62x54R-mm rimmed Type: Tracer Range of Trace (m): 1,200 Muzzle Velocity (m/s): 798</p>				

NOTES

The bolt mechanism and gas recovery system of the SVD are similar to those of the AK and AKM. The 7.62x54-mm rimmed cartridge of the SVD is not interchangeable with the 7.62x39-mm rimless round of the AK-47/AKM. The SVD performs best when using target grade ammunition, however standard (PKM/PKT) 7.62x54-mm rimmed rounds may also be fired. One squad in each OPFOR mechanized infantry platoon has an SVD. The platoon leader and sniper normally ride in the first squad vehicle. While the sniper has received centralized training on the SVD he also has an assault rifle (usually AKS-74U) for normal combat. His SVD is carried in the IFV/APC for those instances when he acts as a sniper.

United States M82A1A .50-cal Anti-Materiel Rifle

	<div><div>Ammunition Types</div><div><div>.50-cal cartridge</div><div>Raufoss Grade A</div><div>Ball (M2/M33)</div><div>AP (M2)</div><div>AP-I (M8)</div><div>API-T (M20)</div><div>Tracer (M10/21)</div><div>SLAP (M903)</div><div>MP (MK211 Mod 0)</div></div></div>	<div><div>Typical Combat Load</div><div>30</div></div>
<div><div>SYSTEM</div><div><div>Alternative Designations: None</div><div>Date of Introduction: Early 1980s</div><div>Proliferation: Widespread (27+)</div></div><div><div>Description:</div><div>Weight (kg):<div>Empty (w/o magazine): 14.75</div></div><div>Length (mm):<div>Overall: 1,448</div><div>Barrel: 736</div></div><div>Operation: Recoil</div><div>Feed: 10-rd detachable box magazine</div><div>Fire Mode: Semi-automatic only</div></div><div><div>SIGHTS</div><div><div>Name: Unertl</div><div>Type: Optical (matches trajectory of .50-cal Raufoss Grade A)</div><div>Magnification: 10x</div></div><div><div>Name: Swarovski</div><div>Type: Optical (with ranging reticle)</div><div>Magnification: 10x42</div></div><div><div>Night Sights Available: yes</div></div></div><div><div>AMMUNITION</div><div><div>Name: Raufoss Grade A (match)(DODIC A606) (USMC)</div><div>Caliber/length: .50-cal BMG/12.7-mm x 99-m (NATO)</div><div>Type: Standard operating round</div><div>Range (m) (equipment-size targets):<div>Maximum (w/scope): 1,800</div></div><div>Muzzle Velocity (m/s): 854</div></div></div></div>	<div><div><div>Name: MP NM140 (Nammo) MK211 Mod 0</div><div>Caliber/length: .50-cal BMG/12.7-mm x 99-m (NATO)</div><div>Type: Multipurpose</div><div>Range (m) (equipment-size targets):<div>Maximum (w/scope): 1,800</div></div><div>Armor Penetration: 11 mm @45° @1,000 m</div><div>Fragmentation: 20 fragments after hitting 2 mm steel</div><div>Incendiary Effect: Ignition of JP4 and JP8</div><div>Accuracy: <15 cm @ 550 m</div><div>Muzzle Velocity (m/s): 915</div></div><div><div>Name: AP-S NM173 (Nammo)</div><div>Caliber/length: .50-cal BMG/12.7-mm x 99-m (NATO)</div><div>Type: Armor piercing</div><div>Range (m) (equipment-size targets):<div>Maximum (w/scope): 1,800</div></div><div>Armor Penetration: 11 mm @30° @1,500 m</div><div>Accuracy: <15 cm @ 550 m</div><div>Muzzle Velocity (m/s): 915</div></div><div><div>Name: M903 (Olin)</div><div>Caliber/length: .50 cal BMG/12.7-mm x 99-m (NATO)</div><div>Type: Saboted Light Armor Penetrator (SLAP) (actual bullet is tungsten .30 inch penetrator wrapped in a .50-cal plastic sabot)</div><div>Range (m) (equipment-size targets):<div>Maximum (w/scope): 1,500</div></div><div>Armor Penetration: 19 mm (.75 in) @1,500 m</div><div>Accuracy: INA</div><div>Muzzle Velocity (m/s): 1,014</div></div></div> <div><div>VARIANTS</div><div><div>Model 95: Bullpup bolt action, 5-round magazine</div></div></div>	

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The M82A1A provides maneuver commanders with the tactical option of employing snipers with an anti-materiel weapon to augment present 7.62-mm anti-personnel sniper rifles. Recoil equals 7.62x51-mm levels. The USMC uses Raufoss Grade A ammunition, but the rifle is capable of firing any standard 12.7x99-mm Browning machinegun ammunition.